

Gender-congruent ambient scent influences on approach and avoidance behaviors in a retail store[☆]

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Abstract

Ambient scent in a retail environment can influence consumers with such effects likely moderated by congruity between the scent and the retailer's product offering. Prior research does not document such congruity effects for products without an inherent scent and in real-world settings. This article addresses these shortcomings by exploring the evaluative and behavioral effects of congruity between the perceived gender of an ambient scent and a store's gender-based products. A field experiment demonstrates scent congruity to influence perceptions of the store, its merchandise, and actual sales. Supporting an S–O–R interpretation, internal consumer responses to the environment mediated these effects. © 2006 Elsevier Inc. All rights reserved.

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Research showing that environmental olfactory cues affect critical consumer responses (e.g., Bone and Ellen, 1999; Chebat and Michon, 2003; Mattila and Wirtz, 2001; Morrin and Ratneshwar, 2000, 2003; Spangenberg et al., 1996) fuels retailers' acquiescence to the importance of attending to environmental psychological variables. Although researchers recognize olfactory cues as behavior moderators, the appropriateness (or congruity) of olfactory cues receives empirical attention in only two published studies (Bone and Jantrania, 1992; Mitchell et al., 1995). These studies show congruity (as compared to incongruity) between a scent and a focal product leads to favorable outcomes: It improves information processing (Mitchell et al., 1995), enhances product evaluations (Bone and Jantrania, 1992), and alters choice behavior (Mitchell et al.,

1995). Existing research remains in the laboratory and examines stimuli with inherent scents (i.e., hand lotion and cleaning agents, see Bone and Jantrania, 1992; chocolate, see Mitchell et al., 1995). In the real world, firms offer many products that do not have scent associations.

This article explores customers' responses to an ambient scent in an actual store. Rather than focusing on scents inherent to products (e.g., floral scents at a florist), the study in this article investigates the effectiveness of ambient scents that do not originate from the product offering. The in-store study explores congruity between the gender-based product offerings of a clothing retailer and the perceived femininity or masculinity of ambient scents. Consistent with prior conceptualizations of product-scent congruity (i.e., the correspondence or fit of a particular scent with a target object, or its appropriateness in certain contexts; Bone and Ellen, 1999), gender-scent congruity is the correspondence of an ambient scent with the gender-based products offered for sale by a retailer. Following a review of relevant literature and an overview of theoretical expectations, the article reports the results of a field experiment in a clothing store; the experiment examines the effects of congruent versus incongruent gender-based ambient scents on actual consumer responses.

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1. Ambient scent and the retail environment

Specialty stores like bakeries, chocolate shops and florists often carry product lines with inherent ambient scents (Mitchell et al., 1995); these specialty stores rely on scents of their products to influence customers (Bone and Ellen, 1999). Contemporary service providers and managers of stores carrying products not possessing an inherent (or ‘expected’) scent are also adding ambient scents to their retail environments (e.g., an artificially diffused floral scent). This use of ambient olfactory cues by businesses attracts increasing attention from scholars attempting to determine the psychological and behavioral effects of such cues on shoppers.

A recent comprehensive review of the literature (Bone and Ellen, 1999) suggests that the presence of an ambient scent can elicit cognitive elaboration, affective and evaluative responses (e.g., Spangenberg et al., 1996), influence purchase intentions (e.g., Mitchell et al., 1995; Spangenberg et al., 1996), and possibly alter actual customer behavior (although the literature does not address this issue). Research in environmental psychology including works by Mehrabian and Russell (1974), Bitner (1992), and Gulas and Bloch (1995) theoretically support these effects. The theoretical mechanism underlying most of the published research in this area is the stimulus–organism–response (S–O–R) paradigm (for a review see Spangenberg et al., 1996). Regarding ambient scents in retail settings, the S–O–R model posits that environmental olfactory stimuli (S) (combined with other cues) affect consumers’ internal evaluations (O) (e.g., affective responses), which in turn elicit approach or avoidance responses (R).

An environment’s characteristics combine to create levels of affective response and arousal in people. Affect is the general positive or negative state of emotion or feeling and affective response in the context of this work is the emotional reaction to the environment that a person has come in contact with (Bower, 1981). According to the S–O–R model, pleasant scents should lead to pleasant affective (or mood) states while unpleasant odors result in unpleasant affective states (see Ehrlichman and Bastone, 1992). The term arousal refers to the psychological feeling state of excitement elicited by the environment (Mehrabian and Russell, 1974). The S–O–R model suggests that an arousing, affectively pleasant environment should produce approach behaviors while an arousing, affectively unpleasant environment should produce avoidance behaviors. The literature supports the S–O–R-based notion that pleasantly scented environments encourage approach behaviors while unpleasantly scented environments elicit avoidance behaviors (e.g., Bone and Ellen, 1999). Approach behaviors are positive responses toward the environment or items within the environment, such as intentions to remain in, or revisit a store, or actually spending money in a store. Avoidance behaviors reflect opposite responses; that is, a desire to leave a store, no intention to revisit, or failure to spend money.

2. Gender-congruent ambient scent

Social psychology has a long-standing tradition of demonstrating that people generally seek out and embrace consistency

(or congruency) in their lives and avoid inconsistency when possible (Cialdini, 1993; Festinger, 1957; Heider, 1958). Similarly, an important moderator of olfactory effects is congruity between the scent and the product offering (Bone and Jantrania, 1992) or the environment in which the product is offered (Bone and Ellen, 1999; Mitchell et al., 1995). For example, Bone and Jantrania (1992) find that quality ratings are more favorable when an item is scented in a manner congruent with the product category (i.e., coconut sunscreen and lemon cleaner) than when it is scented in an incongruent fashion (i.e., lemon sunscreen and coconut cleaner). Mitchell et al. (1995) demonstrate that ambient olfactory cues (i.e., chocolate or floral scents) influenced consumers’ information processing and choice behavior regarding products either related or unrelated to the scents (i.e., candy assortments or floral arrangements). This research finds that congruent scents enhance consumer judgments (e.g., research participants spent more time processing information in the presence of a congruent scent) and choice behavior (e.g., participants in the congruent scent condition made choices that distribute more evenly across all options). These two studies suggest (but do not directly test) that ambient scents congruent with products in a retail environment should result in more positive outcomes for the retailer than scents that are incongruent with the product offering.

The S–O–R paradigm supports the positive effects of congruence between ambient scent and retailer product offerings. An arousing environment (i.e., a store containing perceptible olfactory cues) evokes positive affective responses if the cues are consistent (or congruent) with consumers’ expectations. Arousal and positive affective response (as a result of cue congruence) should elicit approach behavior while arousal coupled with negative affective response (as a result of cue incongruence) should lead to a lower degree of approach behavior or a higher degree of avoidance behavior. Similarly, information processing research (Mitchell et al., 1995) indicates that scents congruent with a product category increase accessibility of attitudes and autobiographical memories associated with the product, as well as accessibility of information about the product class schema and brand. These factors in turn likely result in more elaboration and a greater number of inferences regarding the product or brand. Ambient scents incongruent with a product category may result in cognitive interference; when a cue does not fit the context, consumer cognition may be potentially taxed to the point of inhibiting attitude formation (Pomerantz, 1981).

While theme- or product-based scents may prove to be effective environmental cues for retailers with relatively narrow product offerings that have an associated scent (e.g., florists or bakeries), the pragmatic applicability of this finding is limited for retailers offering multi-line products with no single inherent or expected scent (e.g., discount and department stores). The current research takes an approach differing from published studies by focusing on congruity between ambient scent and products with no naturally occurring scent. In the retail environment, a variety of factors exist (outside of product offerings) that could be used as a basis for selecting congruent ambient scents. The current research explores the congruity between ambient scents and a non-scent characteristic of the

retail product offering—namely, gender associated with the items for sale. As such, this work is the first to take into account the congruity of gender-based associations pertaining to ambient scents and gender-based associations with products. The pragmatic consideration that many multi-line retailers organize products in their stores based on gender informs the choice of gender as the basis for scent congruity. For example, many department stores separate product offerings by gender, such that women's clothing occupies one floor of the store while men's clothing occupies another. If proven beneficial, such retailers could effectively use ambient scents to alter the retail atmosphere by infusing gender-congruent scents into each of the gender-oriented departments.

The study tests the following expectation: Ambient scents that are gender-congruent with product offerings enhance product evaluations and behavioral responses in a retail setting in comparison to gender-incongruent scents. Consumers shopping in a gender-scent-congruent environment (i.e., a store where merchandise and ambient scent are gender-consistent) exhibit approach behaviors. In contrast, consumers shopping in a gender-scent-incongruent environment (i.e., where merchandise and scent are gender-inconsistent) exhibit avoidance behaviors. As the S–O–R model suggests, internal consumer responses mediate the effects of ambient scent.

3. Scent selection pretest

While the marketplace seeks to segment fragrances on the basis of gender (e.g., perfumes targeted toward men and women), empirical evidence is lacking regarding the perceived gender of ambient scents that could be used in retail settings. Although not all research agrees, gender differences exist regarding olfaction (Brand and Millot, 2001). Research indicates that women are more sensitive to certain odors and have greater abilities to identify scents than men (Wysocki and Gilbert, 1989). Males and females respond differentially to olfactory cues (Gustavson et al., 1987; Jacob and McClintock, 2000; Kirk-Smith and Booth, 1980; Wysocki and Gilbert, 1989). For example, Kirk-Smith and Booth (1980) find women are attracted to (and men avoid) chairs in a doctor's waiting room when saturated with an androstenone odorant (a musky odor in human sweat and urine). Given the lack of research regarding gendered aspects of scent, this study includes a pretest to identify scents appropriate for use in the field experiment. The pretest results provide information on the gender orientation of various scents and informed the selection of scents appropriately perceived as feminine versus masculine.

3.1. Stimuli, participants, and procedures

A commercial aroma distributor donated scents for the pretest following two criteria. The first criterion relates to internal validity and required that the scents be gender-oriented. While the aroma distributor had no knowledge of any research documenting the gender of diffusible ambient scents, the firm suggested several scents likely to be gender-oriented based on their tacit knowledge. The second criterion relates to external

validity and required the scents to be currently in use by retailers such that managers would generally consider them to be commercially viable alternatives. Based on these criteria, twelve scents were selected and pretested; all were natural essential oils (plant extracts) donated by a single supplier.

Participants included 300 students, faculty, and staff (48% female; $M=27.2$ years) intercepted in the student union building of a university located in the town where the main field study was conducted. Following Spangenberg et al. (1996), participants read and signed an informed consent form screening for allergies, and were given a vial containing a single olfactory stimulus and a one-page survey consisting of focal measures (detailed subsequently). Scents were placed in opaque vials to eliminate influence of different oil colors on evaluations (Zellner and Kautz, 1990). The vials (labeled 1 through 12 with no other descriptors) were tightly sealed and contained twelve drops of essential oil on a cotton ball. Participants were asked to open the vial and sniff as much as they liked while completing the survey; most individuals sniffed their vial at least twice. Each research participant evaluated only one randomly assigned scent.

Some concern may arise over the use of a pretest sample that appears to be largely student-based when the field experiment was conducted at a retail establishment open to the general population. This potential concern is alleviated in several ways. First, the pretest was conducted on an alumni weekend; the sample's average age (27.2 years) was significantly higher than the student population's average. Secondly, the *raison d'être* for the community in which the retail establishment is located is support of the university where the scent selection pretest was conducted (students make up approximately 70% of the town's population).

3.2. Measures

Perceived gender orientation of the scents was measured with the sum of three semantic differential items: masculine/feminine, masculine/unmasculine, and feminine/unfeminine (cf. Friedman and Dipple, 1978). Pleasantness of the scents was measured with three summed items: bad/good, favorable/unfavorable, and positive/negative. The perceived intensities of the scents (very weak/very strong; Spangenberg et al., 1996) were also measured. Although perceived intensity in the pretest may not be representative of the intensity experienced in the main experiment, this measure was included to insure similar levels of intensity among those scents selected for inclusion in the main experiment. All items were measured on 7-point scales. Participants' age and gender were also recorded.

3.3. Results and discussion

The primary goal of the pretest was to find one scent judged to be masculine and one judged to be feminine by both genders; that is, we sought strong manipulations for the main study that were unambiguously feminine or masculine. Further, we sought scents that businesses would actually consider using, based on criteria like pleasantness, expense, and intensity (Spangenberg et al., 1996). Summary of pretest results are provided in Table 1.

Of the twelve scents tested, 7 showed a significant gender orientation for the overall sample ($\alpha = .83$ for three masculine–feminine items). When the scents were analyzed separately for male and female research participants, however, only three scents were perceived to have clear gender orientation. Of those, two scents were most clearly associated with masculinity and femininity respectively. As detailed in Table 1, rose maroc was rated significantly more masculine and vanilla was rated significantly more feminine by both genders, as compared to gender neutrality, all $p < .05$. In addition, a measure of the scents' pleasantness revealed that both rose maroc and vanilla were moderately pleasant. Pleasantness scores (neutral = 12) for rose maroc were 14.92 and 17.62 as rated by men and women respectively, $t(23) = 2.49$, $p = .02$, and intensity (on 7-point scale) was rated moderate by both genders (4.92 for men and 5.38 for women), $p > .20$. Pleasantness and intensity ratings of the vanilla scent did not differ across men and women: pleasantness was 14.77 and 12.73 as rated by men and women respectively, $p > .10$, with intensity ratings of 5.36 and 6.18 as rated by men and women respectively, $p > .10$. Rose maroc was associated with a higher level of pleasantness than vanilla, $F(1, 46) = 37.84$, $p = .001$, yet an interaction effect of scent and gender on pleasantness scores did not emerge, $p = .75$.

Based on clear results for gender orientation and equivalent level of scent intensity rose maroc was selected as the masculine scent and vanilla was selected as the feminine scent for use in the main field experiment. The positive pleasantness scores for both of these scents suggested that they would also be realistic choices for retailers.

4. Field experiment method

Ambient scents were manipulated in the store environment, actual shoppers served as experimental participants, and actual sales served as one of several dependent variables.

Table 1
Results of ambient scent selection pretest

Scent	Gender orientation of scent						Pleasantness
	Total sample		Female sample		Male sample		
	M	t-value	M	t-value	M	t-value	
Cinnamon	11.76	.33	11.00	1.15	12.46	.41	12.92
E/O Blend	9.12	3.38**	9.39	2.28*	8.83	3.27**	8.92
Geranium	10.44	2.25*	11.56	.37	9.81	2.63*	13.80
Lavender	10.28	2.64**	10.69	1.57	9.83	2.09	12.44
Neroli	11.72	.36	11.53	.41	12.00	.00	9.52
Patchouly	12.24	.29	12.67	.54	11.85	.14	11.28
Rose Maroc	17.16	6.28**	18.69	7.87**	15.50	2.66*	16.32
Sage	11.16	1.12	9.71	1.64	11.72	.32	10.80
Vanilla	9.84	3.42**	8.46	3.38**	10.57	2.18*	13.84
Vetiver	14.08	2.29*	14.00	1.55	14.20	1.73	13.80
Winter Mint	9.84	3.29**	9.08	3.37**	10.54	1.50	10.28
Ylang Ylang	11.60	.44	10.50	1.19	12.62	.48	12.76

Note: Gender neutrality is equal to 12, values greater than 12 indicate masculinity. Cell entries include means and associated t -tests comparing mean against scale midpoint. Scent pleasantness is reported for both genders with neutrality equal to 12. Significance levels $p < .05$ (2-tail) indicated by "*" and $p < .01$ (2-tail) indicated by "**".

4.1. Design, participants and procedure

The field experiment applied a between-participants design with two conditions: feminine ambient scent (vanilla) versus masculine ambient scent (rose maroc). The study did not include a control condition (no scent) as part of the design due to concerns of the retailer in whose the study was conducted. In particular, the proprietor felt that the elimination of scent altogether would be incommensurate with his best interests since the store environment normally includes a scent (not used in this study). Further, given that prior research demonstrates the basic effect of ambient scent on consumer responses (Spangenberg et al., 1996), exclusion of a control condition in this study does not threaten its internal validity.

The experiment was conducted in a clothing store located in a small university-centered community. The retailer sold both men's and women's clothing in equivalent quadrature floor spaces; product mix was equally divided into areas targeted toward each gender. The experiment occurred during a two-week period when a storewide sale was held. The sale began 2 weeks before the beginning of the experiment and ran for several weeks after the experiment was completed; such a time frame ensured consistent advertising, pricing, and product availability.

Participants were 181 shoppers (82 men and 99 women). The majority of customers were shopping for themselves; thus, male customers predominantly purchased men's clothing and female customers most often bought women's clothing. Of the 202 consumers visiting the store over the course of the study, only 10 exhibited cross-gender buying; this small number did not allow for meaningful analyses and thus these consumers were dropped from further experimental consideration. Of consumers entering the store over the course of the study, 11 refused to complete the dependent measure questionnaire (4 women and 7 men with no pattern associated with either scent). A total of 92 participants visited the store in the first week and 89 in the second. Participants' gender was consistently distributed across days and weeks during the experiment; 90 customers were exposed to the masculine scent, and 91 to the feminine scent. Thus, distribution of participants (across both genders) included 93 customers who shopped in the presence of a congruent ambient scent and 88 in the incongruent ambient scent. These two conditions serve as the independent variable in subsequently reported analyses. (An alternate approach would be to conduct a 2×2 MANOVA with shopper gender and ambient scent serving as two independent variables. Results and interpretation of this alternate analysis mirror the findings reported herein.)

Experimental scents were diffused throughout the entire store using a commercial scent diffuser designed for use by retailers. The scent was congruent when the scent's gender orientation matched the gender of the products offered (i.e., rose maroc for men's clothing, and vanilla for women's clothing) and incongruent when the scent's gender orientation did not correspond with the product offering (i.e., rose maroc for women's clothing and vanilla for men's clothing). In order to minimize any potential confounding effects of scent intensity and pleasantness, the proprietor and three researchers pretested and adjusted the intensity of the scent in the store environment to a mild intensity

level. The two focal scents were counterbalanced during the two-week experiment. In particular, data were collected on Tuesday, Wednesday, Friday, and Saturday of each week and the scents were changed each preceding Sunday and Thursday. Such a procedure allowed for the scents to be switched and manipulations to be counterbalanced between days and weeks. Data were not collected for at least 1 day after changing scents in order to allow the previous scent to dissipate and the new scent to diffuse fully throughout the store. Intensity of the scents was constantly maintained across the various experimental treatments. Participants were unaware of the scent manipulation; that is, scent was not mentioned by research participants in response to the open-ended hypothesis-guessing question at the end of the questionnaire.

4.2. Measures

Dependent measures included evaluation of the store and its merchandise, and customer approach/avoidance behaviors. Shopper's overall evaluation of the store was measured by the sum of three items: bad/good, unfavorable/favorable, and negative/positive, $\alpha > .90$. Evaluation of the merchandise was assessed with a series of single items assessing: merchandise selection (adequate/inadequate), merchandise style (outdated/up-to-date), merchandise quality (low/high), and merchandise prices (low/high) (Belizzi et al., 1983), all measured on 7-point scales.

Perceived time spent in the environment was measured by asking participants, "Without looking at your watch, how long did you spend shopping in the store today?" To insure that the participants estimated only shopping time in the store, this question appears first on the survey. Actual time spent in the store was also measured following prior research (Milliman, 1982, 1986; Spangenberg et al., 1996), however, this variable was not influenced by the manipulation and therefore not discussed further. Intentions to visit the store (Spangenberg et al., 1996) were measured by asking the question, "Assuming you were going to purchase this type of merchandise and had the money, how likely would you be to visit this store?" (unlikely/likely; 7-point scale).

Because no known academic research has shown the effects of olfactory cues on actual behavioral measures of approach/avoidance, the measures for this experiment build from research exploring the effects of music on consumers in actual retail settings (Milliman, 1982, 1986). The retailer provided the number of individual clothing items purchased and dollars spent by each individual customer; itemized sales records were matched with questionnaire responses to confirm accuracy of participant self-report.

4.3. Mediators and other measures

To provide process evidence, a 10-item scale (negative/positive, unattractive/attractive, tense/relaxed, uncomfortable/comfortable, bad/good, boring/stimulating, unlively/lively, dull/bright, unmotivating/motivating, uninteresting/interesting) was collected to assess the quality of the in-store environment and serve as a mediator (Crowley, 1993; Fisher, 1974; Spangenberg et al., 1996). An exploratory factor analysis indicates a unidi-

mensional factor structure, thus the items were summed ($\alpha = .93$) to form an index of environment quality.

5. Results

Analyses include a MANOVA model assessing the impact of scent congruity on outcome variables (store evaluations, merchandise evaluations, and approach/avoidance behaviors). The analysis also includes a series of regression models to assess mediation.

5.1. Influence of gender scent congruity on outcome variables

The MANOVA model indicated that the nature of ambient scent (i.e., congruent or incongruent) has a significant impact on store and merchandise evaluation, and approach/avoidance behaviors, Wilk's $\Lambda = .78$, $p < .001$. Summary statistics for all dependent measures are reported in Table 2.

Congruent ambient scent has a positive impact on all evaluative responses, all $p \leq .02$. In particular, gender-congruent ambient scents lead to positive significant effects on the overall evaluation of the store, $F(1, 179) = 22.56$, $p < .01$. Further, gender-congruent ambient scents lead to more favorable evaluations of the store's merchandise regarding: selection, $F(1, 179) = 5.52$, $p < .05$; style, $F(1, 179) = 17.34$, $p < .01$; quality $F(1, 179) = 14.96$, $p < .01$; and prices $F(1, 179) = 9.87$, $p < .01$.

Gender-congruent ambient scents also have significant effects on approach/avoidance behaviors. Significant effects emerge for: perceived time shopping in the store $F(1, 179) = 19.99$, $p < .01$; intentions to visit the store $F(1, 179) = 10.95$, $p < .01$; the number of items purchased $F(1, 179) = 6.23$, $p < .01$; and the amount of money spent in the store $F(1, 179) = 10.59$, $p < .001$. In the presence of gender-congruent ambient scent, shoppers perceive that they have spent more time in the store, bought more items, and spent more money on their purchases. They express stronger intentions to visit the store in the future. The results support the

Table 2
Effects of ambient gender scent on store evaluations, merchandise evaluations, and approach/avoidance behaviors

Dependent measure	Means for ambient scent		F-value
	Incongruent (n=88)	Congruent (n=93)	
<i>Evaluations of the store and merchandise</i>			
Overall store impression	18.53	20.02	22.56**
Merchandise selection	5.72	6.12	5.52*
Merchandise style	5.53	6.32	17.34**
Merchandise quality	6.07	6.59	14.96**
Merchandise prices	5.50	4.87	9.87**
<i>Approach/avoidance behaviors</i>			
Perceived shopping time	15.95	23.95	19.99**
Intent to visit store	6.03	6.56	10.95**
Number of items purchased	.91	1.71	6.23**
Money spent (sales)	\$23.01	\$55.14	10.59**

Note: All F-tests associated with (1, 179) d.f.

Significance levels $p \leq .05$ indicated by "*" and $p \leq .01$ by "**".

prediction of a positive effect of gender–congruent ambient scent on store evaluation, merchandise evaluations, and the measured approach/avoidance behaviors.

5.2. Mediation analysis

The mediating role of environmental quality in the preceding effects was tested via four sets of regression equations following Baron and Kenny (1986). To establish mediation the following conditions must be met: (1) the mediator must relate to the independent variable; (2) the dependent variable must relate to the mediator; (3) the independent variable must influence the outcome variable; and (4) the once significant influence of the independent variable on the dependent variable weakens in the presence of the mediator.

Table 3 shows results of the mediation analyses indicating that congruity of ambient scent is positively related to the environmental quality scale, $\beta = .313$, $p < .01$. In addition, environmental quality relates significantly to each of the dependent variables at $p < .01$. Ambient scent congruity relates to each of the dependent variables, all $p < .05$. The relationships between scent congruity and the dependent variables weaken in the presence of environmental quality differences, such that beta coefficients decrease in all instances (and become non-significant in the majority of the cases). Overall, results of the mediation analysis provide evidence (in addition to the significant MANOVA results) that the S–O–R model accounts for the findings.

6. General discussion

The current research demonstrates that shoppers evaluate the store and its merchandise more favorably, and are more likely to exhibit approach behaviors in the presence of an ambient scent congruent with gender-based products in comparison to an incongruent scent. These results emerge when other store factors like pricing and advertising are held constant. The finding that the presence of a gender-congruent scent increases the majority of approach behaviors for shoppers in an actual store, including money spent, is of practical interest. Of theoretical importance is empirical evidence that the S–O–R

model of environmental psychology accounts for observed effects of environmental cue congruity (cf. Mitchell et al., 1995; North et al., 1999). The effect of congruent ambient scents on sales is the most important finding. Few controlled experimental studies of atmospheric effects have access to actual sales figures—indeed, the authors are unaware of any published research on olfaction demonstrating the effects of varying scents on actual sales.

The findings of the current experiment extend prior research (e.g., Spangenberg et al., 1996) by demonstrating that beyond merely incorporating ambient scent, managers should identify gender-preferred or gender-appropriate scents to diffuse in their retail environments. The findings support prior research indicating that scent appropriateness or congruity is an important evaluative influence. A vital distinction between the current investigation and prior work is that this research focuses on congruity between an ambient scent and a product category without an inherent scent. For retailers who do not have scents inherently congruent with their product offerings, yet desire to use ambient scents, some other form of congruity, such as that between scent and product gender orientation, is necessary for effective implementation of this atmospheric cue. As many retail outlets (or departments within outlets) physically separate gender-based product offerings (e.g., men's and women's clothing), gender-congruent scents may be an easily implemented, inexpensive, and effective way to enhance consumer responses to store environment and merchandise.

A number of directions for future research emerge from the findings of the present study: Given its limitation to a single retailer, future research could usefully replicate this study in other venues and settings with possible alterations to the research design (e.g., measurement of additional process variables; inclusion of additional experimental treatments such as a non-scent condition). Future work could determine additional scents exhibiting product gender congruity and examine the effects of such scents in a wider array of retail outlets. Future research should also consider prior literature on congruity and information processing (e.g., Fiske and Pavelchak, 1986; Mandler, 1982; Sujun et al., 1986). Research by Mandler (1982) suggests that moderate levels of incongruity between a new product and a product category can lead to enhanced product evaluations. A similar effect may exist for ambient scents such that moderately incongruent scents could be more effective than incongruent and congruent scents. Adapting the current study design requires the addition of a mildly gender incongruent scent condition. If such a scent yields more favorable reactions to the environment than (in)congruent scents, retailers could diffuse a single scent in a variety of areas (keeping in mind, of course, that the scent be congruent to mildly incongruent with retailers' product offerings).

Considering the interactive effects of multiple scents within the retail environment and the potential for the blending of incongruent scents is another practical direction for future research activity (motivated by retailers in multi-line stores). As existing research does not address the interactive effects of different cues, additional research could investigate the use and coordination of multiple environmental cues (scents, sounds,

Table 3
Tests of mediation

Dependent variable	Independent variable(s)		
	Fisher	Congruity	Congruity (w/ Fisher)
Selection	.49**	.17*	.02
Style	.63**	.30**	.11
Quality	.61**	.28**	.10
Prices	-.19**	-.23**	-.19*
Time	.35**	.32**	.23**
Intent	.55**	.24**	.08
Items	.33**	.18*	.09
Sales	.38**	.24**	.13

Note: Cell entries include standardized beta coefficients associated with appropriate independent and dependent variables. A positive relationship exists between ambient scent congruity and environmental quality, $\beta = .313$. Significance levels $p \leq .05$ indicated by “**” and $p \leq .01$ indicated by “***”.

décor, etc.) in a retail setting. Similar to work in advertising and promotions (e.g., Schultz et al., 1993), developing a theory of integrated atmospherics to help guide retailers choice and use of various environmental psychological cues is appropriate. Exploring the congruity of multiple environmental cues and its effect on consumer behavior is one useful direction for future research.

The findings of the current field experiment may be useful in non-retail settings since ambient scent should influence approach/avoidance behaviors in other situations where a controllable environment surrounds people. The use of ambient scent to influence the behaviors of employees in an organization's office building or manufacturing facility is an interesting direction for such research (cf. Bitner, 1992).

Theory needs to inform future field experiments. One area worthy of inquiry is to determine dimensions of scent congruity beyond perceived product gender. The notion that product gender congruity matters is one of the most important findings of the current work. What other dimensions might similarly be to the benefit of environmental psychologists? A variety of theoretically intriguing dimensions deserve exploration (e.g., geographic region, consumer gender, ethnicity, and age); however, identifying the right smell may be difficult (as research on the effects of appropriate music suggests; Yalch and Spangenberg, 1990). Future research should identify olfactory stimuli that are effective in targeting different viable marketing segments.

In summary, the mere presence of an ambient scent clearly leads to important changes in consumers' evaluations of retail outlets, the associated environment, and merchandise offered, in addition to having effects on key consumption behaviors. Retailers should not use unpleasant ambient scents in their retail environments, and a pleasant scent does more for a retailer than no scent at all (Spangenberg et al., 1996). Given that managers have considerable latitude in selecting ambient scents, it is critical to consider important moderating factors in order to optimize the effects of this atmospheric variable. Retailers should consider the use of scents congruent with shopper gender and gender-based products as a method for increasing positive evaluations of their store environment, merchandise, and sales.

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